DP Barcode: D358148 MRID No.: 46570128

DATA EVALUATION RECORD
ACUTE LC_{50} TEST WITH AN ESTUARINE/MARINE SHRIMP
OPPTS 850.1035

1. **CHEMICAL:** DPX-MAT28 Technical PC Code No.: None

2. **TEST MATERIAL:** Aminocyclopyrachlor Purity: 92.2%

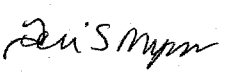
3. **CITATION**

Authors:	Gallagher, S.P., T.Z. Kendall and H.O. Krueger
Title:	DPX-MAT28 Technical: A 96-Hour Static Acute Toxicity Test with the Saltwater Mysid (*Americamysis bahia*)
Study Completion Date:	March 19, 2008
Laboratory:	Wildlife International, Ltd., Easton, Maryland
Sponsor:	E.I. du Pont de Nemours and Company, Wilmington, Delaware
Laboratory Report ID:	112A-236
MRID No.:	47560128
DP Barcode:	D358148

4. **REVIEWED BY:** John Marton, Staff Scientist, Cambridge Environmental, Inc.

Signature:  **Date:** 07/14/09

REVIEWED BY: Teri S. Myers, Senior Scientist, Cambridge Environmental, Inc.

Signature:  **Date:** 07/21/09

5. **APPROVED BY:** Anita Ullagaddi, EPS, OPP/EFED/ERB1

Signature:  **Date:** 10/07/09

6. **DISCLAIMER:** This document provides guidance for EPA and PMRA reviewers on how to complete a data evaluation record after reviewing a scientific study concerning the acute toxicity of a pesticide to shrimp. It is not intended to prescribe conditions to any external party for conducting this study nor to establish absolute criteria regarding the assessment of whether the study is scientifically sound and whether the study satisfies any applicable data requirements. Reviewers are expected to review and to determine for each study, on a case-by-case basis, whether it is scientifically sound and provides sufficient information to satisfy applicable data

requirements. Studies that fail to meet any of the conditions may be accepted, if appropriate; similarly, studies that meet all of the conditions may be rejected, if appropriate. In sum, the reviewer is to take into account the totality of factors related to the test methodology and results in determining the acceptability of the study.

7. STUDY PARAMETERS

Age or Size of Test Organism:	Juveniles (<24 hours)
Definitive Test Duration:	96 hours
Study Method:	Static
Type of Concentrations:	Mean measured

8. CONCLUSIONS:

Results Synopsis
LC_{50}: >122 mg ai/L 95% C.I.: N/A
NOAEC: 122 mg ai/L
Probit Slope: N/A

9. ADEQUACY OF THE STUDY

A. Classification: Acceptable

B. Rationale: Satisfies guideline requirements for acute toxicity testing of mysids.

C. Reparability: N/A

10. BACKGROUND

11. GUIDELINE DEVIATIONS: This study was conducted following guidelines outlined in the U.S. Environmental Protection Agency Series 850- Ecological Effects Test Guidelines, OPPTS Number 850.1035, *Mysid Acute Toxicity Test*; U.S. Environmental Protection Agency, Standard Evaluation Procedure, *Acute Toxicity Test for Estuarine and Marine Organisms*; and ASTM Standard E729-96, *Standard Guide for Conducting Acute Toxicity Tests on Test Materials with Fishes, Macroinvertebrates and Amphibians*. The following deviation from OPPTS 850.1035 was noted:

1. The TOC of the dilution water was not reported.

This deviation does not impact the acceptability of the study.

12. **SUBMISSION PURPOSE:** This study was conducted to provide information on the lethal and sub-lethal effects of DPX-MAT28 Technical to *Americamysis bahia* following acute exposure for the purpose of new chemical registration.

13. **MATERIALS AND METHODS**

A. Test Organisms

Guideline Criteria	Reported Information
Species Preferred species are *Mysidopsis bahia*, *Penaeus setiferus*, *P. duorarun*, *P. aztecus* and *Palaemonetes sp.*	*Americamysis bahia*
Age Juvenile (mysids should be < 24 hours old) or Adults (5-6 days old)	Juveniles <24 hours
Supplier	Obtained from in-house cultures
All shrimp are from same source?	Yes
All shrimp are from the same year class?	Yes

B. Source/Acclimation

Guideline Criteria	Reported Information
Acclimation Period minimum 10 days	Parental culture continuously maintained under test conditions.
Wild caught organisms were quarantined for 7 days?	N/A
Were there signs of disease or injury?	No signs of stress or mortality were observed in the parental culture for 14 days prior to testing.

Guideline Criteria	Reported Information
If treated for disease, was there no sign of the disease remaining during the 48 hours prior to testing?	N/A
Feeding Mysids should be fed daily throughout the study.	Culture mysids were provided live brine shrimp (*Artemia nauplii*) two to three times daily.
Pretest Mortality <3% mortality 48 hours prior to testing	None reported

C. Test System

Guideline Criteria	Reported Information
Source of dilution water Soft reconstituted water or water from a natural source, **not** dechlorinated tap water	Natural seawater collected at Indian River Inlet, Delaware. The water was filtered and diluted to a salinity of approximately 20‰ with well water. The water was pumped through a sand filter to remove particles greater than approximately 25 µm, pumped into a large storage tank and aerated with nozzles. The water was then filtered to 0.45 µm and passed through a UV sterilizer to remove fine particles and microorganisms prior to use in the test.
Does water support test animals without observable signs of stress?	Yes
Salinity 20±3 ‰ (parts per thousand)	20‰
Water Temperature 25 ± 2 °C	24.7-25.7°C

Guideline Criteria	Reported Information
pH 8.0-8.3 for marine (stenohaline) shrimp, 7.7-8.0 for estuarine (euryhaline) shrimp, monthly range < 0.8	7.4-8.1
Dissolved Oxygen Between 60 and 105%	≥6.1 mg/L (≥83% of saturation)
Total Organic Carbon Should be <5 mg/L in reconstituted seawater	Not Reported
Test Aquaria 1. Material: Glass or stainless steel 2. Size: 19.6 L is acceptable for organisms ≥ 0.5 g (e.g. pink shrimp, white shrimp, and brown shrimp), 3.9 L is acceptable for smaller organisms (e.g. mysids and grass shrimp). 3. Fill volume: 15 L is acceptable for organisms ≥ 0.5 g, 2-3 L is acceptable for smaller organisms.	Test vessels were 2.0 L glass beakers containing 1.5 L of test solution.
Type of Dilution System Must provide reproducible supply of toxicant	N/A; test was conducted under static conditions
Flow Rate Consistent flow rate of 5-10 vol/24 hours, meter systems calibrated before study and checked twice daily during test period	N/A
Biomass Loading Rate Static: ≤30 mysids/L	N/A
Photoperiod 14 hours light, 10 hours dark	16L:8D with a 30 minute transition period of low light intensity

Guideline Criteria	Reported Information
Solvents Not to exceed 0.5 ml/L for static tests or 0.1 ml/L for flow-through tests	N/A; a solvent was not used

D. Test Design

Guideline Criteria	Reported Information
Range Finding Test If LC_{50} >100 mg/L with 30 shrimp, then no definitive test is required.	Nominal concentrations were selected in consultation with the study sponsor and were based on the results of range-finding data; however, no range-finding results were provided.
Nominal Concentrations of Definitive Test Control & 5 treatment levels; a geometric series in which the ratio is between 1.5 and 2.0.	0 (negative control), 7.5, 15, 30, 60 and 120 mg ai/L mean-measured concentrations: <0.0181 (<LOD; control), 7.5, 15, 30, 60 and 122 mg ai/L
Number of Test Organisms Minimum 20/level, may be divided among containers	20 per treatment level, equally divided among two replicates
Test organisms randomly or impartially assigned to test vessels?	Yes
Biological observations made every 24 hours?	Yes

Guideline Criteria	Reported Information
Water Parameter Measurements 1. Temperature Measured constantly or, if water baths are used, every 6 hrs, may not vary > 1°C 2. DO and pH Measured at beginning of test and ever 48 h in the high, medium, and low doses and in the control	Temperature, DO and pH were measured in each test vessel at test initiation and every 24 hours thereafter. Temperature was also measured continuously in the negative control. Salinity was measured at test initiation and termination.
Chemical Analysis needed if solutions were aerated, if chemical was volatile, insoluble, or known to absorb, if precipitate formed, if containers were not steel or glass, or if flow-through system was used	Samples were collected from each test vessel at 0 and 96 hours and analyzed for the test material using HPLC with UV detection.

14. REPORTED RESULTS

A. General Results

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements included in the report?	Yes. Signed and dated No Data Confidentiality, GLP and Quality Assurance statements were provided. This study was conducted in compliance with U.S. EPA Good Laboratory Practice Standards (40 CFR Parts 160 and 792), which are consistent with: OECD Principles of Good Laboratory Practice (ENV/MC/CHEM (98) 17); and Japan MAFF (11 NohSan, Notification No. 6283, Agricultural Production Bureau, 1 October 1999).
Recovery of Chemical	100-102% of nominal

Guideline Criteria	Reported Information
Control Mortality Not more than 10% of control organisms may die or show abnormal behavior.	5%
Raw data included?	Yes
Signs of toxicity (if any) were described?	Yes

Mortality

Concentration (mg ai/L)		Number of Mysids	Cumulative Number Dead			
Nominal	Mean Measured		Hour of Study			
			24	48	72	96
Control	<0.0181	20	0	0	0	1
7.5	7.5	20	0	0	0	0
15	15	20	0	0	0	0
30	30	20	0	0	0	0
60	60	20	0	1	1	1
120	122	20	0	1	1	1

Other Significant Results: The observed mortalities were not considered to be treatment-related. The mortality at the highest treatment was level consisted of a missing mysid, which was assumed to be dead. The study authors reported NOAEC and LC_{50} values of 122 and >122 mg ai/L, respectively.

B. Statistical Results

Method: All toxicity values were visually determined based on the mean-measured concentrations.

96-hr LC_{50}: >122 mg ai/L 95% C.I.: N/A
NOAEC: 122 mg ai/L
Probit Slope: N/A

15. VERIFICATION OF STATISTICAL RESULTS

Parameter	Result
Binomial Test LC_{50} (C.I.)	>122 mg ai/L
Moving Average Angle LC_{50} (95% C.I.)	>122 mg ai/L
Probit LC_{50} (95% C.I.)	>122 mg ai/L
Probit Slope	N/A
NOAEC	122 mg ai/L

16. REVIEWER'S COMMENTS:

The lack of treatment-related mortality and sub-lethal effects precluded the statistical analysis of the data. Therefore, the reviewer visually determined all toxicity values based on the mean-measured concentrations. There reviewer's results were identical to those of the study authors.

The in-life portion of the definitive toxicity test was conducted from December 3 to December 7, 2007.

17. REFERENCES:

U.S. Environmental Protection Agency. 1996. Series 850- Ecological Effects Test Guidelines (*draft*), OPPTS Number 850.1035: *Mysid Acute Toxicity Test.*

U.S. Environmental Protection Agency. 1985. Standard Evaluation Procedure: *Acute Toxicity Test for Estuarine and Marine Organisms (Shrimp 96-Hour Acute Toxicity Test)*. Hazard

Evaluation Division. Office of Pesticide Programs. EPA-540/9-85-101. Washington, DC.

ASTM Standard E729-96. 1996. *Standard Guide for Conducting Acute Toxicity Tests on Test Materials with Fishes, Macroinvertebrates and Amphibians*. American Society for Testing and Materials.